NHDOT SPR2 PROGRAM
RESEARCH PROGRESS REPORT

Project # SPR 26962W		**Report Period** Year 2019 ☐Q1 (Jan-Mar) ☐Q2 (Apr-Jun) ☐Q3 (Jul-Sep) X Q4 (Oct-Dec)
Project Title: Log Jam Monitoring		
Project Investigator: Tom Ballestero **Phone: (603) 862-1405**		**E-mail:** tom.Ballestero@unh.edu
Project Start Date: May 1, 2019	**Project End Date:** April 30, 2022	**Project schedule status:** X On schedule ☐ Ahead of schedule ☐ Behind schedule

Brief Project Description:

Extreme bank erosion along Route 16 in Errol is to be stabilized using an engineered log jam (ELJ). This is the first installation of an ELJ by NH DOT, and as such NH DOT is interested in the benefits of the structure pertaining to performance, habitat, and costs. The project shall be monitored for three years, including eight months of pre-construction monitoring and two years of post-construction monitoring. Monitoring activities are to cover hydraulic, structural, flora, and fauna; in addition, the monitoring provides inspection information to DOT to assess any need for maintenance or repairs. The ultimate objective of the project is to document all salient aspects of ELJs relative to road planning, permitting, construction, and maintenance, plus documenting stream system changes resulting from the ELJ.

The project is, thus far, proceeding as planned, with only one minor change. Originally underwater game cameras were to be used to help monitor aquatic activity. Subsequent investigations into the cameras themselves, their usefulness, range, etc. have determined that such devices would likely have limited practical use for monitoring. Conversations with NHFG personnel agreed with this assessment, though as of yet have not determined another means to monitor aquatic activity (though ideas have been proposed, including electrofishing, sport fishing fish finders, and installing GoPro cameras).

Progress this Quarter (include meetings, installations, equipment purchases, significant progress, etc.):

During this quarter, data from the summer 2019 field season was synthesized. The raw bathymetry data was reduced to x, y, z coordinates. This data was then joined with the field survey data and available LiDAR data to create a single topographic surface. At the moment a 2-D hydraulic model (SMS) is running. The next phase of the modeling effort is to calibrate the model.

Also during this quarter attempts were made to get the Errol dam operating procedures from the dam owner.

Items needed from NHDOT (i.e., Concurrence, Sub-contract, Assignments, Samples, Testing, etc…):

Construction schedule and dates.

Anticipated research next three (3) months:

In the next quarter, we plan to continue modeling efforts and have a calibrated hydraulic model of the existing conditions before summer 2020. We will also download game camera images. Since the planned NHDOT construction window is summer 2020. As construction is planned for summer 2020, we will coordinate with NHDOT about summer 2020 field efforts, where before and after bathymetry will be taken as well as surveys at the log jam stream bank system.

Circumstances affecting project:

We have been unsuccessful in obtaining reservoir operating rules from the Errol Dam owners. Since the USGS operates gages at the impoundment, we also tried that avenue but to no success. Although not fatal, the workaround may be to install pressure transducer at the downstream end of the model reach and near to the study bank. In addition, summer 2020 we may deploy an acoustic digital 2-d or 3-d current meter. The reservoir dam operations and current measurements both yield field information to assist calibration of the hydraulic model.

Budget, scope, and timing are all on schedule.

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Tasks (from Work Plan)	Planned % Complete	Actual % Complete
Task 1 Kick off meetings and information gathering	100% complete	100% complete
Task 2 (in the fourth quarter, proceeding as planned)	60%	60%